

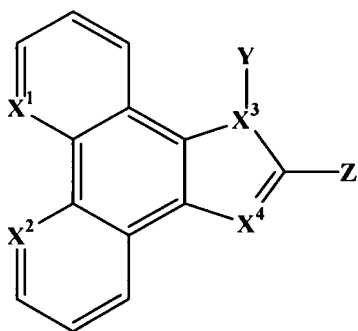
**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

WE CLAIM:

1. (cancelled)
2. (previously presented) A compound as claimed in claim 5 wherein said compound is photoluminescent or electroluminescent.
3. (cancelled)
4. (cancelled)
5. (currently amended) A compound ~~having a formula (1)~~ represented by formula (1)



(1)

wherein X<sup>1</sup>, X<sup>2</sup>, X<sup>3</sup> and X<sup>4</sup> are nitrogen;

Y is selected from the group consisting of ~~hydrogen~~, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is a substituted or unsubstituted aryl moiety selected from the group consisting of

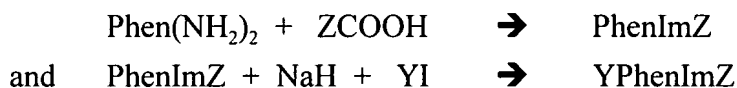
phenyl, biphenyl, naphthyl, anthryl, phenanthryl, pyrenyl, pyridyl, bipyridyl, indyl, and quinolinyl; and

wherein a said substituent is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, a nitro group, a nitrile group,  $-CF_3$  and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

6. (previously presented) A compound as claimed in claim 5 wherein Y is an aliphatic group having 1-12 carbon atoms.

7. (previously presented) A compound as claimed in claim 5 wherein Y is an aliphatic group having 1-4 carbon atoms.

8. (currently amended) A method of synthesizing a compound as claimed in claim 5 comprising at least one step selected from the group consisting of:



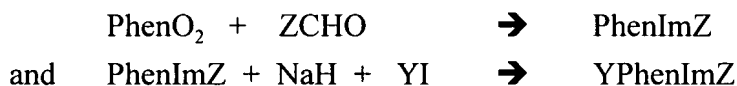
wherein PhenIm is imidazo[4,5-f]-[1,10]phenanthroline;

Y is selected from the group consisting of ~~hydrogen~~, substituted or unsubstituted aryl group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is selected from the group consisting of phenyl, biphenyl, naphthyl, anthryl, phenanthryl, pyrenyl, pyridyl, bipyridyl, indyl, and quinolinyl; and

wherein a said substituent is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, a nitro group, a nitrile group,  $-CF_3$  and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

9. (currently amended) A method of synthesizing a compound as claimed in claim 5 comprising at least one step selected from the group consisting of:



wherein PhenIm is imidazo[4,5-f]-[1,10]phenanthroline;

Y is selected from the group consisting of ~~hydrogen~~, substituted or unsubstituted aryl group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

Z is selected from the group consisting of phenyl, biphenyl, naphthyl, anthryl, phenanthryl, and pyrenyl; and

wherein a said substituent is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, a nitro group, a nitrile group, -CF<sub>3</sub> and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

10. (currently amended) A photoluminescent or electroluminescent compound having a formula selected from the group consisting of 2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (2), 1-methyl-2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (3), 2-(2-pyridyl)imidazo[4,5-f]-[1,10]phenanthroline (4), and 1-methyl-2-(2-pyridyl)imidazo[4,5-f]-[1,10]-phenanthroline (5).

11. (previously presented) A composition comprising a compound as claimed in claim 5, an organic polymer and a solvent.

12. (original) A composition comprising a photoluminescent or electroluminescent compound as claimed in claim 2, an organic polymer and a solvent.

13. (original) A photoluminescent product or an electroluminescent product comprising a compound as claimed in claim 2 or claim 10.

14. (original) The product of claim 13 which is a flat panel display device.

15. (original) The product of claim 13 which is a luminescent probe.

16. (cancelled)

17. (original) An electroluminescent device for use with an applied voltage, comprising:  
a first electrode,  
an emitter which is an electroluminescent compound as claimed in claim 2 or claim 10,  
and  
a second, transparent electrode,  
wherein voltage is applied to the two electrodes to produce an electric field across the emitter so that the emitter electroluminesces.

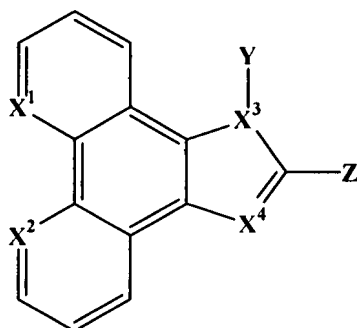
18. (original) An electroluminescent device for use with an applied voltage, comprising:  
a first electrode,  
a second, transparent electrode,  
an electron transport layer adjacent the first electrode,  
a hole transport layer adjacent the second electrode, and  
an emitter which is an electroluminescent compound as claimed in claim 2 or claim 10  
interposed between the electron transport layer and the hole transport layer,  
wherein voltage is applied to the two electrodes to produce an electric field across the  
emitter so that the emitter electroluminesces.
19. (original) 2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (2).
20. (original) 1-methyl-2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (3).
21. (original) 2-(2-pyridyl)imidazo[4,5-f]-[1,10]phenanthroline (4).
22. (original) 1-methyl-2-(2-pyridyl)imidazo[4,5-f]-[1,10]phenanthroline (5).
- 23-31. (cancelled)
32. (previously presented) A photocopier comprising a compound of claim 5 or 40, wherein  
photons strike said compound and charge separation occurs in said compound.
33. (previously presented) A photovoltaic device comprising a compound of claim 5 or 40,  
wherein photons strike said compound and charge separation occurs in said compound.
34. (previously presented) A photoreceptor comprising a compound of claim 5 or 40, wherein  
photons strike said compound and charge separation occurs in said compound.
35. (previously presented) A solar cell comprising a compound of claim 5 or 40, wherein  
photons strike said compound and charge separation occurs in said compound.
36. (previously presented) A semiconductor comprising a compound of claim 5 or 40, wherein  
photons strike said compound and charge separation occurs in said compound.

37. (original) A molecular switch comprising a compound as claimed in claim 2 that is capable of existing in more than one luminescent state, wherein acid, base, and/or incident light produces a change in the luminescent state of said compound.

38. (original) The molecular switch of claim 37 wherein said compound is 2-(9-anthryl)imidazo[4,5-f]-[1,10]phenanthroline (2) or 2-(2-pyridyl)imidazo[4,5-f]-[1,10]phenanthroline (4).

39. (original) A circuit comprising a molecular switch as claimed in claim 37 or 38.

40. (currently amended) A compound ~~having a formula (1)~~ represented by formula (1)



(1)

wherein  $X^1$ ,  $X^2$ ,  $X^3$  and  $X^4$  are nitrogen;

Y is selected from the group consisting of hydrogen, a substituted or unsubstituted aryl group, and a substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic;

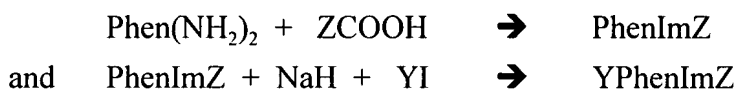
Z is a substituted or unsubstituted aryl moiety selected from the group consisting of ~~phenyl~~, biphenyl, ~~naphthyl~~, anthryl, phenanthryl, pyrenyl, pyridyl, bipyridyl, indyl, and quinolinyl; and

wherein a said substituent ~~is not further substituted and~~ is selected from the group consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, an amino group, a nitro group, a nitrile group,  $-CF_3$  and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.

41. (previously presented) A compound as claimed in claim 40, wherein said compound is photoluminescent or electroluminescent.
42. (previously presented) A compound as claimed in claim 40, wherein Y is an aliphatic group having 1-12 carbon atoms.
43. (previously presented) A compound as claimed in claim 40, wherein Y is an aliphatic group having 1-4 carbon atoms.
44. (previously presented) A composition comprising a compound as claimed in claim 40, an organic polymer and a solvent.
45. (previously presented) A composition comprising a photoluminescent or electroluminescent compound as claimed in claim 41, an organic polymer and a solvent.
46. (previously presented) A photoluminescent product or an electroluminescent product comprising a compound as claimed in claim 41.
47. (previously presented) The product of claim 46 which is a flat panel display device.
48. (previously presented) The product of claim 46 which is a luminescent probe.
49. (previously presented) An electroluminescent device for use with an applied voltage, comprising:  
a first electrode,  
an emitter which is an electroluminescent compound as claimed in claim 41, and  
a second, transparent electrode,  
wherein voltage is applied to the two electrodes to produce an electric field across the emitter so that the emitter electroluminesces.
50. (previously presented) An electroluminescent device for use with an applied voltage, comprising:  
a first electrode,  
a second, transparent electrode,

an electron transport layer adjacent the first electrode,  
 a hole transport layer adjacent the second electrode, and  
 an emitter which is an electroluminescent compound as claimed in claim 41 interposed  
 between the electron transport layer and the hole transport layer,  
 wherein voltage is applied to the two electrodes to produce an electric field across the  
 emitter so that the emitter electroluminesces.

51. (currently amended) A method of synthesizing a compound as claimed in claim 40  
 comprising at least one step selected from the group consisting of:



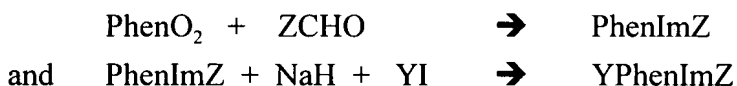
wherein PhenIm is imidazo[4,5-f]-[1,10]phenanthroline;

Y is selected from the group consisting of hydrogen, substituted or unsubstituted aryl  
 group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be  
 straight, branched or cyclic;

Z is selected from the group consisting of ~~phenyl~~, biphenyl, ~~naphthyl~~, anthryl,  
 phenanthryl, pyrenyl, pyridyl, bipyridyl, indyl, and quinoliny; and

wherein a said substituent ~~is not further substituted and~~ is selected from the group  
 consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, an amino group, a  
 nitro group, a nitrile group, -CF<sub>3</sub> and an aliphatic group having 1-24 carbon atoms which may be  
 straight, branched or cyclic.

52. (currently amended) A method of synthesizing a compound as claimed in claim 40  
 comprising at least one step selected from the group consisting of:



wherein PhenIm is imidazo[4,5-f]-[1,10]phenanthroline;

Y is selected from the group consisting of hydrogen, substituted or unsubstituted aryl  
 group, and substituted or unsubstituted aliphatic group having 1-24 carbon atoms which may be  
 straight, branched or cyclic;

Z is selected from the group consisting of ~~phenyl~~, biphenyl, ~~naphthyl~~, anthryl,  
 phenanthryl, and pyrenyl; and

wherein a said substituent ~~is not further substituted and~~ is selected from the group  
 consisting of an aryl group, an alkoxy group, a hydroxy group, a halo group, an amino group, a

nitro group, a nitrile group,  $\text{-CF}_3$  and an aliphatic group having 1-24 carbon atoms which may be straight, branched or cyclic.